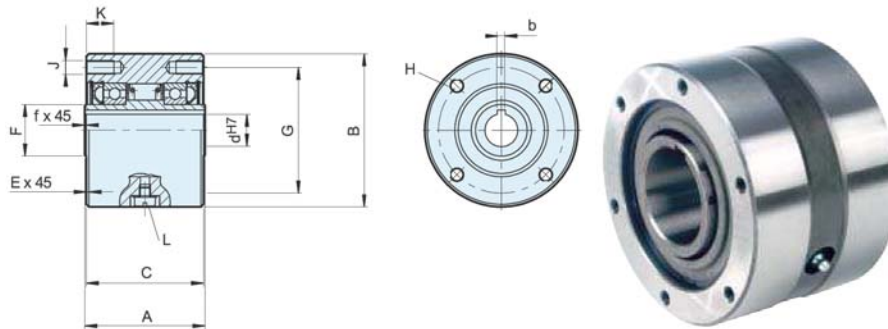


Installation and Maintenance Instructions Freewheel Type HPI

To avoid premature failure of the freewheel or possible machine malfunction, installation of the freewheel should be carried out by suitably qualified personnel and according to the following instructions. STIEBER will not accept liability in cases of non-compliance with these instructions!



Type	Size	Overrunning speeds															Lubricant			Weight	Drag torque								
		FSO	FSO-GR	d ^{H7} -bxh	d ^H	A	B	C	E	F	G	H	J	K	L	f	FSO	FSO.GR	HPI			T _R							
		T _{KK} ¹⁾ [Nm]	n _{max} ²⁾ [min ⁻¹]	n _{max} ³⁾ [min ⁻¹]	min-max [mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[ml]	[ml]	[ml]	[kg]	[Ncm]								
FSO FSO-GR HPI	300	379	3000/900	3600/900	15-5x5	12...19	63.50	76.20	60.45	1.6	28.58	66.67	4	M8	13	M6	0.8	7	10	14	1.6	18							
	400	407	2800/850	3600/850	18-6x6	12...22	69.85	88.90	68.07	1.6	30	73	4	M8	13	M6	0.8	10	20	20	2.7	27							
	500	1621	2500/800	3000/800	30-8x7	19...33	88.90	107.95	85.73	1.6	45	92	4	M8	16	M6	1.5	22	35	35	4.8	31							
	600	3105	2200/750	2400/750	40-12x8	24...57	95.25	136.525	92.2	1.6	63.5	120.6	6	M8	16	M6	1.6	52	84	84	8.6	62							
					50-14x6																								
					50-14x9																								
	700	6900	1600/450	2000/450	60-18x11	48...82	127.00	180.975	123.85	1.6	90	158.75	8*	M10*	20	M6	1.6	168	280	280	19	156							
				65-18x11																									
				70-20x12						101.6 ⁹⁾																			
Type	Size	Overrunning speeds															Lubricant			Weight	Drag torque								
		FSO	FS	d ^{H7} -bxh	d ^H	A	B ⁵⁾	C	D	E	F	G	H	J	K	L	P	f	FSO			HPI	FS	T _R					
		T _{KK} ¹⁾ [Nm]	n _{max} ²⁾ [min ⁻¹]	n _{max} ³⁾ [min ⁻¹]	min-max [mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[ml]	[ml]	[ml]	[kg]	[Ncm]						
FSO FS HPI	750	9660	1800/650	1000/650	65-18x11																								
					70-20x12																								
					75-20x12	57-87	152.4	222.25	149.2	31.7	1.6	107.74	177.8	8*	M12*	25	1/2-20	49.2	1.6	222	384	207	38	5.08					
					80-22x14																								
					85-22x14																								
					80-22x14																								
					800	17940	1500/525	850/525	90-25x14	66-112	152.4	254.00	149.2	31.7	1.6	139.70	227.0	8	M12	25	1/2-20	49.2	1.6	222	444	251	46	7.12	
					900	24408	1350/500	700/500	110-28x16	92-138	161.9	304.80	158.7	34.9	1.6	161.92	247.65	10	M16	32	1/2-20	54	1.6	532	473	340	71	8.47	
									120-32x18																				
									130-32x18																				
130-32x18																													
1027	36612	700/375	500/375	150-36x20	125-177	168.3	381.00	165.1	34.9	3.2	228.60	298.45	12	M16	32	1/2-20	54	3.2	651	946	473	113	13.56						
				175-45x25																									

Description:

HPI freewheels are oil lubricated and are primarily used as indexing freewheels with high indexing frequency.

The main components of HPI units are: Outer race, inner race, a cage assembly with a number of individually spring energised sprags, two roller bearings and two shaft seals.

HPI units are based on imperial dimensions, but with metric mounting threads as standard.

HPI units may be installed with either the inner race or the outer race used as the indexing drive input.

Prior to Installation:

HPI units should be unpacked and installed in a clean dry working environment.

For units despatched 'dry', corrosion inhibitor should be removed using flushing oil prior to installation.

The inner race should be fitted to a shaft of h6 tolerance if the unit is supplied with a metric bore.

We recommend the following shaft tolerances when using imperial bores and shafts.

Bore Ø H7	Shaft fit
up to 2"	Clearance fit up to 0.05 mm clearance
greater than 2" to 4"	Clearance fit up to 0.06 mm clearance
greater than 4" to 7"	Clearance fit up to 0.075 mm clearance

The mounting register for the outer race should be to H7 or G7 tolerance.

The freewheeling direction should be checked prior to installation. If reversal of the freewheeling direction is required, turn the freewheel through 180°.

We recommend the following tightening torque for the fixing bolts; based on bolts to grade 10.9:

Size	Bolts	Tightening Torque [Nm]
300	M8	35
400	M8	35
500	M8	35
600	M8	35
700	M10	69
750	M12	120
800	M12	120
900	M16	295
1027	M16	295

Installation:

The clutch should be installed as an assembly.

The inner race should be pulled on to the shaft. The key should be the full length of the hub.

Apply axial load on to the inner race only. Use a circlip or retainer plate for axial location of the freewheel.

After Installation:

After installation, ensure smooth rotation of the unit in the freewheeling direction.

Ensure the unit contains the correct volume of lubricant prior to use.

The expected drag torque when overrunning is about 1/1000 of the freewheel nominal driving torque.

Dismantling:

To remove the unit, follow the installation instructions in reverse order.
Apart from the replacement of oil seals we do not recommend the unit be dismantled.
If problems arise please refer to your local STIEBER stockist.

Technical data for HPI units:

Size	Max. Torque [Nm]
300	760
400	810
500	3250
600	3100
700	13800
750	19500
800	36000
900	49000
1027	73000

Lubrication:

HPI units are usually delivered oil lubricated using oil to ISO.VG 10.
Depending on application details, it may be necessary to change the oil used.
Please refer to the lubricants recommendation below.

Note: There is little heat generated in indexing - oil grade should be selected based on the ambient temperature.

Oil level check:

3 Plugs:

If unit has 3 plugs, position two plugs above the centre line of the freewheel at 45° from horizontal axis of unit.

- Remove both upper plugs and fill using either of the open ports until oil runs from the other (gives 90% fill).

4 Plugs:

If unit has 4 plugs, position two plugs above the centre line of the freewheel at 45° from horizontal axis of unit.

- Remove both upper plugs and fill using either port until oil runs from the other (gives 90% fill).

Where the unit is mounted on a non horizontal shaft please refer to your local STIEBER stockist.

Oil change:

Position one plug at 6 o'clock and one plug at 12 o'clock.

- Remove top and bottom plug and allow unit to drain before replacing the plugs and re-filling as described above.

The plug seals should be replaced if showing signs of leakage.

Lubricant volumes - HPI units:

Size	Lubrication	Volume [ml]	Number of Plugs
300	oil	14	3
400	oil	20	3
500	oil	35	3
600	oil	85	3
700	oil	280	3
750	oil	385	4
800	oil	445	4
900	oil	470	4
1027	oil	950	4

Maintenance:

- The lubricating oil should be changed after approximately 10 hours operation. Further oil changes should be made after every 2000 hours.
In arduous applications -high temp / dusty conditions- change oil every 1000 operating hours.
- With ambient temperatures above 80°C, check lubrication regularly.
- For operating temperatures below -20°C and above 100°C contact the technical department of your lubricant suppliers.

For indexing applications, oil types with a kinematic viscosity of about 10mm²/s at the normal operating temperature are recommended.

Lubricants with slip additives such as graphite, Molykote or similar agents should be avoided!

Recommended Lubricants

	Ambient temperature				Grease
	-40°C to- 15°C	-15°C to +15°C	+15°C to +30°C	+30°C to +50°C	
	Operating temperature				
	-20°C to +20°C	+10°C to +50°C	+40°C to +70°C	+50°C to +85°C	
	Oil				
ISO - VG DIN 51519	10	22	46	100	
ARAL	SUMOROL CM10	SUMOROL CM22	MOTANOL HK46	DEGOL CL100T	ARALUB HL2
BP	ENERGOL CS10	ENERGOL CS22	ENERGOL CS46	ENERGOL RC100	ENERGREASE LS2
DEA	ASTRON HL10	ASTRON HL22	ASTRON HL46	ASTRON HL100	GLISSANDO 20
ESSO	NUTO H10 SPINESSO 10	NUTO H22 SPINESSO 22	NUTO H46 TERESSO 46	NUTO H100	BEACON 2
FUCHS	RENOLIN MR3	RENOLIN DTA22	RENOLIN DTA46	RENOLIN MR30	RENOLIT LZR2
KLÜBER	CRUCOLAN 10	CRUCOLAN 22	CRUCOLAN 46	CRUCOLAN 100	POLYLUB WH2
MOBIL	VELOCITE No6	VELOCITE No10	VACTRA MEDIUM VG46	VACTRA HEAVY VG100	MOBILUX 2
SHELL	MORLINA 10	MORLINA 22	MORLINA 46	MORLINA 100	ALVANIA G2
TOTAL	AZZOLA ZS10	AZZOLA ZS22	AZZOLA ZS46	AZZOLA ZS100	MULTIS 2

Alternatively we strongly recommend the use of multigrade oils SAE 10W-40 at working temperature between 0° and +80 ° C.

Corrosion inhibitor: Rivolta KSP

Time of protection: 6 to 12 months

Recommendation: Prior to use, remove corrosion inhibitor using flushing oil

STIEBER GmbH

PO Box 10 53 80

D-69043 Heidelberg, Tel +49 (0)6221 30 47 0, Fax +49 (0)6221 30 47 31

last changes 24.09.2009